Test Report
Quality of Bitumen

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	IS : 73 – 1992 & Specification for Road & Bridge Works, MORT&H,
Grade of Bitumen	60 / 70
Location	Hot Mix Plant
Material	Bitumen
Sample No	1
Date	2-Jun-2018

Sl. No.	Description	Test Results	Requirement as per IS:73 - 1992
1	Penetration at 25^0C , 1 / 10 mm	64	60 – 70
2	Softening Point, (^{0}C)	55	45 – 55
3	Specific Gravity	1.1	Min. 0.97
4	Ductility at 27^0C, in cm	83	Min. 75
5	Flash Point, (^{0}C)	187	Min. 175

Note:

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Test Report
Quality of Bitumen

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Lab No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	IS : 73 – 1992 & Specification for Road & Bridge Works, MORT&H,
Grade of Bitumen	60 / 70
Location	Hot Mix Plant
Material	Bitumen
Sample No	2
Date	2-Jun-2018

Sl. No.	Description	Test Results	Requirement as per IS:73 - 1992
1	Penetration at 25^0C , 1 / 10 mm	66	60 – 70
2	Softening Point, (^{0}C)	52	45 – 55
3	Specific Gravity	1.1	Min. 0.97
4	Ductility at 27^0C, in cm	84	Min. 75
5	Flash Point, (^{0}C)	179	Min. 175

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Test Report
Rate of Spread of Tack Coat

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Work No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Work Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Location	At Site
Material	Bitumen
Sample No	1
Date	5-Jun-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.656	1.652	1.653
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.015	0.011	0.012
6	Rate of spread (d/a)	kg / m^2	0.375	0.275	0.300
7	Average	kg / m^2	0.317		
8	Specified Limit	kg / m^2	Not less than 0.25 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.317 kg / m2

Note:
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Test Report
Rate of Spread of Tack Coat

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Location	At Site
Material	Bitumen
Sample No	2
Date	5-Jun-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.655	1.651	1.652
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.014	0.01	0.011
6	Rate of spread (d/a)	kg / m^2	0.35	0.25	0.275
7	Average	kg / m^2	0.292		
8	Specified Limit	kg / m^2	Not less than 0.25 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.292 kg / m2

Note:

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Test Report
Rate of Spread of Tack Coat

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Location	At Site
Material	Bitumen
Sample No	3
Date	5-Jun-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.655	1.652	1.653
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.014	0.011	0.012
6	Rate of spread (d/a)	kg / m^2	0.35	0.275	0.3
7	Average	kg / m^2	0.325		
8	Specified Limit	kg / m^2	Not less than 0.25 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.325 kg / m2

Note:

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Test Report
Rate of Spread of Tack Coat

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Work Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Location	At Site
Material	Bitumen
Sample No	4
Date	6-Jun-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.656	1.652	1.651
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.015	0.011	0.01
6	Rate of spread (d/a)	kg / m^2	0.375	0.275	0.250
7	Average	kg / m^2	0.300		
8	Specified Limit	kg / m^2	Not less than 0.25 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.300 kg / m2

Note:

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Test Report
Rate of Spread of Tack Coat

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Test No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Work Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Location	At Site
Material	Bitumen
Sample No	5
Date	6-Jun-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.654	1.654	1.655
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.013	0.013	0.014
6	Rate of spread (d/a)	kg / m^2	0.325	0.325	0.350
7	Average	kg / m^2	0.333		
8	Specified Limit	kg / m^2	Not less than 0.25 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.333 kg / m2

Note:

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Test Report
Rate of Spread of Tack Coat

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Location	At Site
Material	Bitumen
Sample No	6
Date	6-Jun-2018

Sl. No.	Determination	Unit	Test No 1		
			Longitudinal Distribution		
1	Size of Plate (mxn)	m^2	0.2x0.2	0.2x0.2	0.2x0.2
2	Area of the Plate (a)	m^2	0.04	0.04	0.04
3	Initial weight of the empty Plate (b)	kg	1.641	1.641	1.641
4	Final weight of plate after application of Tack Coat (c)	kg	1.657	1.653	1.65
5	Weight of Prime coat/ Tack Coat (d = c-b)	kg	0.016	0.012	0.009
6	Rate of spread (d/a)	kg / m^2	0.4	0.3	0.225
7	Average	kg / m^2	0.308		
8	Specified Limit	kg / m^2	Not less than 0.25 kg / m^2		

Results: Rate of Spread of Prime Coat / Tack Coat is: 0.308 kg / m2

Note:

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Test Report
Aggregate Impact Value

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	IS : 2386 (Part - 4) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Location	At Site
Material	Coarse Aggregate
Sample No	1
Date	4-Jun-2018

Sl. No.	Determination	Unit	Trails	
1	Weight of empty cylinder, w1	gm	960	960
2	Weight of container filled with Aggregate, w2	gm	1308	1304
3	Weight of the Aggregate before compaction, (w2 - w1) = w3	gm	348	344
4	Weight of the sample passing through 2.36 mm IS sieves after Impact, w4	gm	84	82
5	Weight of the sample retained on 2.36 mm IS sieve after Impact, w5	gm	264	262
6	Aggregate Impact Value (w4 / w3)x100	%	24.14	23.84
7	Specified Limit	%	24	

Results: Average Aggregate Impact Value: **23.99** %

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Test Report
Aggregate Particle Shape

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Job No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Mix Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	IS : 2386 (Part - 1) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Location	Hot Mix Plant
Material	Coarse Aggregates
Sample No	1
Date	4-Jun-2018

I.S. Sieves Size		Weight of Retained Sample on Each Sieve (minimum 200 Pieces) (gm)	Flakiness Index		Elongation Index	
Passing through IS Sieves (mm)	Retained on IS Sieves (mm)		Thickness Gauge	Weight of Aggregates in each fraction passing on thickness gauges (gm)	Length Gauge	Weight of Aggregates in Fraction retained on length gauges (gm)
63	50	0	33.9	0	-	0
50	40	0	27	0	81	0
40	25	0	19.5	0	58.5	0
31.5	25	0	16.95	0	-	0
25	20	1554	13.5	234	40.5	252
20	16	1443	10.8	122	32.4	149
16	12.5	954	8.55	149	25.6	156
12.5	10	465	6.75	67	20.2	73
10	6.3	236	4.89	58	14.7	65
	SW	4652	SWf	630	SWe	695

Flakiness Index 13.54 %
Elongation Index 14.94 %
Combined Flakiness and Elongation Indices : 28.48 %

Comments: Maximum allowable Combined Flakiness and Elongation Indices for Bituminous Concrete is 35%.

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Test Report

Aggregate Stripping Value

roject Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
lient	Executive Engineer, Project Division Yalahanka
ob No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
ix Type	Bituminous Concrete (BC)
ontractor	M/s KRIDL
est Method	IS : 6241 - 1971 & Specification for Road & Bridge Works, MORT&H, Revision V.
ocation	Hot Mix Plant
aterial	Coarse Aggregates / Bitumen
ample No	1
ate	4-Jun-2018
ype of Aggregate	Coarse Aggregate
ype of Binder	60 / 70 Grade
ercentage of Binder Used	5% by weight
otal weight of Aggregate	200 gms
otal weight of Binder	10 gms
emperature of water bath	40^0C

Observation Number	Stripping Percentage	Average Percentage	Average Retained Coating (%)
1	3.6	3.53	96.47
2	3.5		
3	3.5		

omments: Minimum allowable Aggregate Stripping Value for Bituminous Concrete is

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MECADEZ CORE TECHNOLOGIES PRIVATE LIMITED
PROJECT MANAGEMENT & CONSULTANCY SERVICES

Test Report

Specific Gravity and Water Absorption

t Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
	Executive Engineer, Project Division Yalahanka
	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
pe	Bituminous Concrete (BC)
ctor	M/s KRIDL
ethod	IS: 2386 (Part - 111) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
on	Hot Mix Plant
al	Coarse Aggregates
e No	1
	4-Jun-2018

Particulars	Computations	Test Numbers		Mean
		Test 1	Test 2	
ght of Empty Basket Immersed in Water	W_1 g	761	763	
water	W_2g	2024	2022	
Veight of Saturated Aggregate in water	W_sg = W_2- W_1	1263	1259	
ht of saturated surface dry aggregate in Air	W_3 g	2059	2047	
Aggregate	W_3- W_s	796	788	
Weight of Oven dried Aggregate	W_4g	2020	2018	
Specific Gravity	W_4/(W_3- W_s)	2.54	2.56	2.55
Apparent Specific Gravity	W_4/(W_4- W_s)	2.67	2.66	2.66
Water Absorption	(W_4- W_3)*100/ W_4	1.93	1.44	1.69

imum allowable Aggregate Water Absorption value for Bituminous Concrete is 2.0%.

ndicated above are based on the tests carried out on the sample at site.

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Test Report
Aggregate Gradation

Project Name	Improvements to roads and drains at Prakruthi Layout in Ward No.05
Client	Executive Engineer, Project Division Yalahanka
Lab No	MCTPL/BBMP/Project-YNK/QR/2017-2018/02
Work Type	Bituminous Concrete (BC)
Contractor	M/s KRIDL
Test Method	IS : 2386 (Part - 1) 1963 & Specification for Road & Bridge Works, MORT&H, Rev. V.
Location	Hot Mix Plant
Material	Coarse Aggregates
Sample No	1
Date	4-Jun-2018

Weight of Sample: 4000 gms

Sl. No.	I.S. Sieve size (mm)	Weight Retained (gm)	Percentage of weight Retained (%)	Cumulative Percentage of weight retained	Cumulative % of Passing		Remarks
					Test Result	Gradation Limits as per MORT&H	
1	19.00	0	0.00	0.00	100.00	100	Gradation satisfies the MORT&H Grade II Specification for Bituminous Concrete
2	13.20	675	16.88	16.88	83.13	72-100	
3	9.50	433	10.83	27.70	72.30	70-88	
4	4.75	236	5.90	33.60	66.40	53-71	
5	2.36	476	11.90	45.50	54.50	42-58	
6	1.18	340	8.50	54.00	46.00	34-48	
7	0.60	435	10.88	64.88	35.13	26-38	
8	0.30	430	10.75	75.63	24.38	18-28	
9	0.15	378	9.45	85.08	14.93	12-20)	
10	0.075	360	9.00	94.08	5.93	(4-10)	

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